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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/163,848	09/30/1998	MARK PEAIRS	074451.P090	5958

7590 08/20/2003

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2178	22

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/163,848	PEAIRS ET AL.	
	Examiner	Art Unit	
	Cong-Lac Huynh	2178	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This action is responsive to communications: RCE filed 6/10/03 to the application filed on 09/30/98.

2. Claims 1-32 are pending in the case. Claims 1, 9, 13, 19, 24, 29 are independent claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102((e), f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3, 5, 7-9, 11, 13-28 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al. (US Pat No. 6,185,550 B1, 2/6/01, filed 6/13/97) in view of Lee (US Pat No. 5,841,905, 11/24/98, filed 10/25/96) and Jamali (US Pat No. 6,243,501 B1, 6/5/01, filed 5/20/98).

Regarding independent claim 1, Snow discloses:

- analyzing a user approach to placing documents within the second directory structure to determine a document classification profile associated with the first directory structure (col 2, lines 31-56: the fact that the document classification is done automatically within the user-defined categories implies that *a user approach in defining the document categories is analyzed* so that these categories can be applied for classifying documents; further, the fact that the indexing creates a *summary of all documents within a desired directory and subdirectories* suggests a profile of document classification since the summary of all documents in desired directories and subdirectories shows the information of how the documents are classified to be fitted in the desired directories)
- storing the electronic document in one or more directories within a first directory structure based on the classification of the document and the document classification profile associated with the first directory structure (col 1, lines 38-50: storing a document in directories corresponding to the categories selected for classification of documents; col 2, lines 31-56: providing an automatic document classification within user-defined categories, and the fact that the indexing creates a *summary of all documents within a desired directory and subdirectories*

suggests a profile based on the document classification associated with the directory structure since the summary of all documents in desired directories and subdirectories shows the information of how the documents are classified to be fitted in the desired directories)

Snow does not disclose:

- generating a classification of the document based on the textual profile and the graphical profile
- analyzing textual content and graphical content of a previously unclassified electronic document to determined a textual profile and a graphical profile of the electronic document
- using a first directory structure mirroring a second directory structure used by a user for storing documents

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Snow to include "using a first directory structure mirroring a second directory structure used by a user for storing documents" since it was well known that one *can copy one directory structure to get a same directory structure*, which is equivalent to mirroring a directory structure, for storing documents.

Lee discloses:

- analyzing textual content and graphical content of a previously unclassified electronic document to determined a textual profile and a graphical profile of the electronic document (figure 11, col 2, lines 27-32; col 12, lines 35-40)

Lee does not disclose:

- generating a classification of the document based on the textual profile and the graphical profile

Jamali discloses:

- generating a classification of the document based on the textual profile and the graphical profile (abstract, col 2, lines 45-54: classifying documents based on the extracted attributes from the documents and comparing the extracted attributes with multiple classes of documents)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Jamali and Lee into Snow for the following reason. Snow provides storing the classified documents based on the class hierarchy. Jamali provides comparing extracted attributes of documents to the multiple defined classes of documents where the extracted attributes can comprise the text attributes and the graphical attributes included in the textual profile and the graphical profile resulted from analyzing a document as in Lee. The combination of Jamali and Lee into Snow would enhance the document classification method by using the assisting factors such as the user-defined categories and the textual profile and the graphical profile of a document in effective performing the automatic classification for documents into the desired directories and subdirectories.

Regarding claims 2, 3, 7, which are dependent on claim 1, Snow discloses that the *directory structure* comprises a hierarchy of documents (abstract, col 1, lines 38-50). Snow does not disclose that the directory structure mirrors the pre-existing directory.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included said mirroring in Snow since it was well known that one can copy a directory to obtain the same directory structure.

Regarding claim 5, Lee discloses:

- determining a point set corresponding to the electronic document, wherein points of the point set correspond to points of lines (figures 1, 4)
- determining a density of points within the point set (col 2, lines 27-28)
- classifying the multimedia document which includes text and graphic based on the feature of the media (figure 11; col 12, lines 36-37)

Lee does not disclose generating a document profile based, at least in part, on the density of points within the point set. Instead Lee discloses profiling each of the contour polygon in the text group and the graphics group (col 2, lines 31-33; col 12, lines 38-40). However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Lee to include generating a document profile based on the density of points within the point set since it was obvious that each contour polygon includes a plurality of points and the text portion and the graphical portion are different from each other based on the *number of points* contained in each portion, which is the density of points.

Regarding claim 8, which is dependent on claim 1, Snow, Jamali and Lee do not disclose building the pre-existing directory structure by extracting graphical and text

features from documents in a directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory.

However, Snow discloses the hierarchy of directories which include different levels of directories based on different categories of classification (col 1, lines 38-50; col 6, lines 1-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Snow to include building the pre-existing directory structure by extracting graphical and text features from documents in a directory-based memory to obtain a document classification profile of each subdirectory in the directory-based memory because of the following reason. The different levels of directories, which are subdirectories, imply said building since the creation of the subdirectories in different levels of directories is based on different classification categories which may include text and graphic categories.

Independent claims 9 and 11 are for a machine-readable medium of the method of claims 1 and 5, and are rejected under the same rationale.

Regarding independent claim 13, Snow discloses:

- analyzing documents in a pre-existing document directory structure to determine a document classification profile of the pre-existing document directory structure, the document classification profile of the pre-existing document directory structure being based on prior placement document within the pre-existing

document directory structure by a user (col 1, lines 38-50; col 5, line 55 to col 6, lines 1-8: storing a document in directories corresponding to the categories selected for classification of documents; the classification of documents is based on a category nodes included in the class hierarchy where the class hierarch has a category definition comprising a set of defining terms for classifying documents; the category definition of the class hierarchy is considered as a document classification profile since it is the information of classification of the class hierarchy; col 3, line 41 to col 4, line 9: the class hierarchy, which is considered as a pre-existing directory for storing classified documents, are created by users)

- placing the electronic document in the directory structure based on the document classification profile of the pre-existing document directory structure and the document classification to resemble the classification approach of the user (col 1, lines 38-52: storing documents in directories corresponding to the categories selected for classification of documents; col 6, lines 7-14: correct placing documents when classifying documents based on the class hierarchy)

Snow does not disclose:

- generating a mirror directory structure based on the pre-existing document directory structure
- receiving a previously unclassified electronic document
- analyzing textual content and graphical content of the electronic document to determine a textual profile and a graphical profile of the electronic document

- the document classification is based on the textual profile and the graphical profile of the document

Lee discloses:

- analyzing textual content and graphical content of the electronic document to determine a textual profile and a graphical profile of the electronic document (figure 11, col 2, lines 27-32; col 12, lines 35-40)
- receiving a previously unclassified electronic document (the fact that Lee analyzes the text and graphics of a document and generate a text profile and a graphical profile of the document inherently shows that said receiving is performed for analyzing)

Jamali does not disclose that the document classification is based on the textual profile and the graphical profile of the document. Instead, Jamali discloses the document classification is based on the extracted attributes of a document (abstract, col 2, lines 45-54).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Jamali to include the text profile and the graphical profile since the attributes in Jamali can comprise the text attributes and the graphical attributes extracted from the document.

Also, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Snow into Jamali and Lee for the following reason. Snow provides storing the classified documents in the class hierarchy, where the category definition of the class hierarchy defines the category for classifying

documents in the hierarchy. Jamali provides comparing extracted attributes of documents to the multiple defined classes of documents where the extracted attributes can comprise the text attributes and the graphical attributes including in the textual profile and the graphical profile resulted from analyzing a document in Lee.

Regarding claim 14, which is dependent on claim 13, Snow discloses:

- generating a list of directories in the pre-existing document directory structure (col 3, line 40 to col 4, line 10)
- examining files in the directories of the pre-existing document directory structure to determine the content (col 1, lines 38-50)
- examining the content of the files to determine *the document classification profile* of the directories in the pre-existing document directory structure (col 1, lines 38-50; col 2, lines 46-67)
- recursively descending the pre-existing document directory structure (col 3, lines 40-56)

Claim 15, which is dependent on claim 13, includes the added limitations of claim 3, and is rejected under the same rationale.

Regarding claim 16, which is dependent on claim 13, the same argument is applied as in claims 1 and 2 above. The pre-existing directory is organized in hierarchy, which shows the relationships among directories, and the generating of a mirror directory is

carried out by copying the pre-existing directory. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have recognized that the copying will copy all features of the pre-existing directory to a mirror directory such as set of directories and relationships among them.

Regarding claims 17 and 18, Snow discloses:

- determining a primary directory and the secondary directory in the pre-existing document directory structure in which the document should be placed based on the document classification profile of the pre-existing document directory structure (col 2, lines 46-67: the class hierarchy includes categories and sub-categories)
- storing the document in a primary corresponding directory and storing the document in a secondary corresponding directory in the mirror directory structure that corresponds to the primary directory in the pre-existing document directory (col 1, lines 38-50)

Claims 19-23 are for the computer-readable medium of the method claims 13-14, 16-18, and are rejected under the same rationale.

Claims 24-28 are for an apparatus of claims 13-14, 16-18, and are rejected under the same rationale.

6. Claims 4 and 10 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Snow in view of Lee and Jamali as applied to claim 1 above, and further in view of Morita et al. (US Pat No. 5,832,470, 11/3/98, filed 9/29/95).

Regarding claim 4, which is dependent on claim 1, Snow, Lee and Jamali do not disclose:

- determining characteristic words of the document
- determining a frequency for each characteristic word
- building a frequency table based on the frequency associated with each characteristic word

Morita discloses:

- determining characteristic words of the document (figure 13, #1301-#1309; figure 16: keywords in documents
- determining a frequency for each characteristic word (figure 15; col 11, line 58 to col 12, lines 1-7)
- building a frequency table based on the frequency associated with each characteristic word (figure 15, the frequency table based on the keyword in documents)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have combined Morita into Snow, Lee and Jamali to facilitate the text classification in a document using the frequency of keywords in documents.

Independent claim 10 is for a machine-readable medium of the method of claim 1, and is rejected under the same rationale.

7. Claims 6 and 12 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Snow, Lee and Jamila as applied to claims 1 and 9 above, and further in view of Tim Ho et al. (*Decision Combination in Multiple Classifier Systems*, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 16, No. 1, January 1994).

Regarding claim 6, which is dependent on claim 1, Snow, Lee and Jamila do not disclose that the generating of a classification of a document based on the textual and graphical properties comprises combining results from the textual and graphical analysis using a Borda Count.

Ho discloses the Borda Count Method in which the Borda Count is a generalization of the majority vote and the Borda Count for a class is the sum of the number of classes ranked below it by each classifier (page 68, part B).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have incorporated the assigning of points to classes and the sum of the points of Ho into Fan and Nakagawa since Nakagawa discloses the directories to store classified documents in different types and different levels.

Claim 12 is a machine-readable medium for the method claim 6, and is rejected under the same rationale.

8. Claims 29-32 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Mahoney (US Pat No. 5,889,886, 3/30/99, filed 11/28/95) in view of Snow et al. (US Pat No. 6,185,550 B1, 2/6/01, filed 6/13/97).

Regarding independent claim 29 and dependent claim 30, Mahoney discloses:

- a document scanning device (figure 1A)
- a document storage device coupled to the document scanning device, wherein the document storage device is organized as document directory structure having multiple directories (figure 1A, figure 2, figure 3)
- a processor coupled to the document scanning device and to the document storage device, wherein the processor analyzes *the content* of a document scanned by the document scanning device to store the document in a memory (figure 1B)

Mahoney does not disclose determining a directory to store the classified documents. Snow discloses storing the classified documents in the folders based on the document categories (abstract, col 1, lines 38-50).

Mahoney and Snow do not disclose that the storage device has a mirror directory having multiple directories organized based on the document directory structure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have included the storage device has a mirror directory having multiple directories organized based on the document directory structure into Snow and

combined Snow with Mahoney since the mirror directory is generated by merely copying the pre-existing directory.

In addition, Mahoney does not disclose storing of analyzed documents in the mirror directory corresponding to the pre-existing directory. Snow discloses storing analyzed documents in a folder (col 5, line 55 to col 6, line 17).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified Snow to include storing analyzed documents in the mirror directory since by copying of the pre-existing directory, which includes classified documents, the documents will be stored in corresponding directory equivalent to the pre-existing directory. In other words, the copied directory is a mirrored directory.

Regarding claim 31, which is dependent on claim 29, Mahoney discloses that the processor analyzes files stored in the document directory structure to determine content and generates a *document classification profile* of the document directory structure based on the analysis (figure 1A, figure 2).

Regarding claim 32, Mahoney discloses that the document is analyzed based on image and textual content (col 1, lines 23-67; col 2, lines 1-6).

Response to Arguments

9. Applicant's arguments filed 6/13/03 have been fully considered but they are not persuasive.

Applicants argue that Snow does not teach or suggest analyzing a user approach to placing documents in a directory structure to determine a document classification profile of the directory structure since the *document classification profile of the invention is not provided by the user* whereas the *category definition of Snow is provided by the user* (Remarks, page 15).

Examiner respectfully disagrees.

Snow discloses and suggests analyzing a user approach to placing documents in a directory structure to determine a document classification profile of the directory structure (col 2, lines 30-56). The fact that the document classification is done automatically within the user-defined categories implies that *a user approach in defining the document categories is analyzed* so that these categories can be applied for classifying documents. Further, the fact that the indexing creates a *summary of all documents within a desired directory and subdirectories, where the summary is not provided by the users,* suggests a profile of document classification since the summary of all documents within desired directories and subdirectories shows the information of how the documents are classified to be fitted in the desired directories.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wical (US Pat No. 5,918,236, 6/29/99, filed 6/28/96).

Wical (US Pat No. 5,930,788, 7/27/99, filed 7/17/97).

Nakayama (US Pat No. 5,909,510, 6/1/99, filed 5/19/97).

Iwane et al., A Functional Classification Approach to Layout Analysis of Document Images, IEEE October 1993, pages 778-781.

Shih et al., A Document Segmentation, Classification and Recognition System, IEEE 1992, pages 258-267.

Chakrabarti et al., Scalable Feature Selection, Classification and Signature Generation for Generating Large Text Databases into Hierarchical Topic Taxanomies, VLDB Journal 1998, pages 163-178.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cong-Lac Huynh whose telephone number is 703-305-0432. The examiner can normally be reached on Mon-Fri (8:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon can be reached on 703-308-5186. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 707-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9000.

clh
8/12/03

SANJIV SHAH
PRIMARY EXAMINER